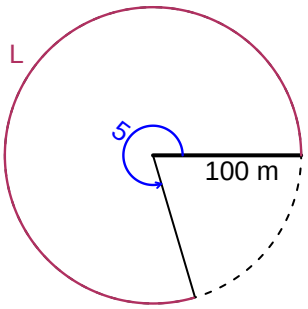
Name: Date:

Trig Final (TEST v618)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

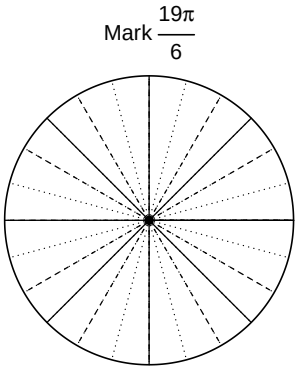
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 100 meters. The angle measure is 5 radians. How long is the arc in meters?

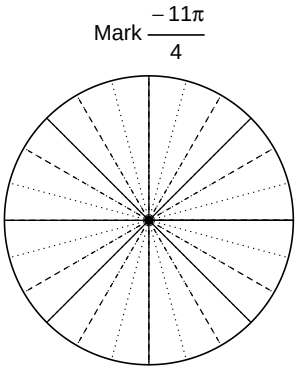


Question 2

Consider angles $\frac{19\pi}{6}$ and $\frac{-11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{19\pi}{6}\right)$ and $\cos\left(\frac{-11\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(19\pi/6)$



Find $\cos(-11\pi/4)$

Question 3

If $\cos(\theta) = \frac{-28}{53}$, and θ is in quadrant II, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 6.02 Hz, an amplitude of 4.68 meters, and a midline at $y = 7.57$ meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).